ABSTRACT OF THE DISCLOSURE

Gasketless interfaces between microfluidic devices and related systems or instruments are provided. A microfluidic device includes a plastically deformable outer layer defining at least one port. An external mating surface having a protruding feature is aligned with the fluidic port defined in the microfluidic device. An actuator depresses at least a portion of the protruding feature into the outer layer adjacent to the fluidic port to cause the protruding feature to plastically deform the outer layer so as to form a reverse impression of the feature. Preferred materials are non-degrading in the presence of and non-absorptive of samples and solvents typically utilized in performing liquid chromatography. Systems for performing chromatography utilizing gasketless interconnects and at least one method for fabricating a multi-feature seal plate are provided.